

CLAIMS

1. A directional coupler comprising coupled lines (8, 9), including a first line (8) and a second line (9), and at least one ground plane (10, 11, 13), characterised in that at least one of the ground planes is a tuning ground plane (10, 11, 13), and in that a distance (14, 25), between the first (8) and the second (9) line, and each distance (15, 17, 26, 27), between the first line (8) and the respective tuning ground plane (10, 11, 13), are adapted so as to contribute to a desired coupling level under compensation conditions.
2. A directional coupler according claim 1, wherein the width of the first and/or the second line (8, 9) are adapted so as to contribute to a desired coupling level under compensation conditions.
3. A directional coupler according to any of the preceding claims, wherein the distance (14, 25) between the first (8) and the second (9) line refers to a horizontal distance (14, 25) in a direction parallel to the at least one ground plane (10, 11, 13) and perpendicular to a longitudinal direction of the coupled lines (8, 9).
4. A directional coupler according to any of the preceding claims, wherein the second line (9) and the at least one tuning ground plane (10, 11, 13) are located on the same side of the first line (8).
5. A directional coupler according to any of the preceding claims, comprising at least two conductive layers (4, 5, 6, 7), whereby at least one dielectric layer (1, 2, 3) is interposed between the conductive layers.
6. A directional coupler according to any of the preceding claims, whereby an electrical length of the directional coupler is a quarter or less of length of the propagated wave.

7. A directional coupler according to any of the preceding claims, wherein the first line (8) comprises at least two strips separated in a vertical direction and electrically joined by means of at least one connection (21).

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8. A directional coupler according to any of the preceding claims, characterised in that a region between the first and the second lines (8, 9) comprises at least partly a gas, and at least one dielectric layer (1, 2, 3) is arranged between the second line (9) and the at least one tuning ground plane (10, 11, 13), whereby each distance (26, 27) between the first line (8) and the respective tuning ground plane (10, 11, 13) is dependent on the respective distance (15, 24) between each tuning ground plane (10, 11, 13) and a boundary between the gas and the dielectric layer (1, 2, 3).

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9. A method for achieving coupling in a directional coupler under compensated conditions, the coupler comprising coupled lines (8, 9), including a first (8) and a second (9) line, and at least one ground plane (10, 11, 13), characterised in that it comprises choosing a distance (14, 25), between the first (8) and the second (9) line, and each distance (26, 27), between the first line (8) and an edge of at least one of the ground planes (10, 11, 13), so as to contribute to a desired coupling level under compensation conditions.

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10. A method according to claim 9, wherein the width of the first and/or the second line (8, 9) are chosen so as to contribute to a desired coupling level under compensation conditions.

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11. A method according to claim 9 or 10, wherein the distance (14, 25) between the first (8) and the second (9) line refers to a horizontal distance (14, 25) in a direction parallel to the at least one ground plane (10, 11, 13) and perpendicular to a longitudinal direction of the coupled lines (8, 9).

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12. A method according to claim 9, 10, or 11, wherein the second line (9) and said respective edge of at least one of the ground planes (10, 11, 13) are positioned on the same side of the first line (8).